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LCD PUBLIC DISPLAY

Operational Guidelines Relating to 24/7 Usage of Mitsubishi Electric LCD Public Displays

These operational guidelines provide information regarding 24/7 usage of our LCD public displays. They are relevant to commercial applications such as flight information displays and digital signage boards where even 24/7 usage may be required. Our LCD public displays differ from consumer-grade television products in that they are electrically and mechanically designed for heavy-use applications. Highly reliable LCD panels and electrical components are used to secure sufficient durability for 24/7 usage. However, due to the characteristics of LCD technology today, there are certain limitations in what Mitsubishi Electric can cover in product warranties. These guidelines address this issue and support customers in long-term use of Mitsubishi Electric public displays.

Mitsubishi Electric Products Compatible with 24/7 Usage

MDT421S / MDT551S / MDT552S / MDT652S / MDT701S
LDT323V / LDT422V / LDT462V / LDT551V

The most critical concerns regarding 24/7 usage of LCD panels are image persistence and accelerated aging issues (e.g., loss or inconsistency of brightness and image staining). These issues are part of the current LCD technology and are unavoidable at this stage. For this reason, Mitsubishi Electric cannot cover these issues in a warranty.

These guidelines provide tips to help users minimize the risk of these problems occurring and thereby prolong the service life of LCD public displays. In particular, to minimize the risk of LCD panel deterioration, Mitsubishi Electric highly recommends an operational period of less than 18 hours per day for MDT Series products and less than 12 hours per day for LDT Series products.

* Please note that other factors apart from operational period can also affect the extent of LCD panel deterioration. For details, please refer to the user manual of the relevant model.

Image Persistence (Short- and Long-term)

After a static image is continuously displayed on a screen for a certain period, traces of the image may remain even after a different image is displayed. This affect is known as short-term image persistence. One way of avoiding this is to switch off LCD public displays as much as possible when they are not in use.

When static images are continuously displayed for even longer periods, it can result in long-term image persistence, which is very difficult to remedy and may involve dark patterns remaining at the edges of letters or boundaries of objects.

Image Staining

Continuously displaying a certain image (particularly a static image) is likely to lead to accelerated aging issues such as loss or inconsistency of brightness or image staining due to the effect of heat/light intensity from the backlight. Once image staining occurs, LCD public displays cannot be restored to their original state. The affected area appears dark (inconsistent), and there is a possibility that the staining will be visible regardless of the images displayed (static and/or moving).

Tips for Long-term Use of LCD Public Displays

The following tips are designed to help users minimize the risk of image persistence and image staining, and secure use of LCD public displays for as long as possible.

Recommended Usage / Settings / Conditions*1:

1. Switch off LCD public displays when they are not in use.
2. Reduce brightness as much as possible
3. Reduce operating temperature as much as required (e.g., room temperature)
4. Use the screensaver function and/or the power saving mode

Recommendations for Content Design:

1. We recommend design content comprised mainly of moving images. When displaying static images, insert moving images at appropriate intervals as a means to refresh the liquid-crystal materials. For the screensaver image, use a moving image or fully black pattern:

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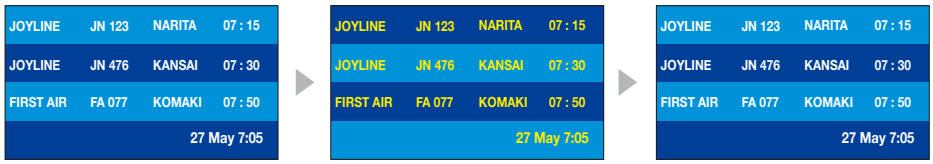
JOYLINE JN 123 NARITA 07 : 15
JOYLINE JN 476 KANSAI 07 : 30
FIRST AIR FA 077 KOMAKI 07 : 50
27 May 7:05

(Insert moving pictures such as promotional videos)

2. Change the background pattern and letter-colors regularly:



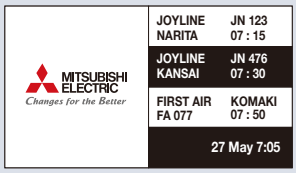
3. Refresh images such as company logos and those with letters at regular intervals:

Examples of Problematic Content Design:

1 When an on-screen window is displayed for a long period, image persistence may occur at the window edges. Shift the position of windows regularly; that is, avoid displaying windows in the same position on the screen.

On-screen window
(there are high-contrast areas at the window edges)

2 When simultaneously displayed patterns have significantly different brightness levels, image persistence may occur at the boundary line between the patterns. Avoid placing these kinds of display contents side-by-side.



High-brightness and low-brightness patterns placed side-by-side

3 Image staining and image persistence tend to stand out on a gray background. Avoid excess use of gray, and where possible, use primary colors for the background.

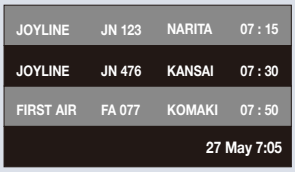


Image with a gray background

*1 For details regarding installation conditions, please refer to the user manual of the relevant model.

MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
http://Global.MitsubishiElectric.com

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